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THE LANSING SKELETON

By ALEŠ HRDLIČKA

The skeleton of the so-called "Lansing man," the history of which has become well known through the writings of Williston,[1] Upham,[2] Winchell,[3] Chamberlin,[4] and Holmes,[5] was examined by me (the skull in the care of Mr M. C. Long at Kansas City, Missouri, the other skeletal parts in the care of Prof. E. Haworth at Lawrence, Kansas) on the fourth and fifth of October, 1902.

Through the courtesy of Mr Long I was enabled to visit and examine at pleasure the site of the discovery of the skeleton, and on digging a little in the tunnel at the end of which the skeleton was discovered, I myself found, not far from this end, a piece of probably human bone *in situ*. However, both my visit and this find are of secondary importance.

The results of my examination of the skeleton were read before the International Congress of Americanists at its New York meeting in October last by Dr George A. Dorsey, who also had examined the skull and who agreed with my conclusions. The publication of this paper, however, was retarded by my last expedition to Mexico.

The Lansing skull is now deposited in the National Museum, and I have reëxamined it as well as compared it with numerous unquestionably modern Indian crania. The present communication, therefore, should be freed from all suspicion of hastily drawn conclusions.

THE SOMATOLOGICAL CHARACTERS OF THE SKELETON

The skeleton is fairly complete, but many of the constituent parts are damaged and many fragments are wanting.

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[1] *Science*, August 1, 1902.

[2] Ibid., August 29, 1902 ; *American Geologist*, September, 1902; *American Anthropologist*, 1902, vol. 4, No. 3, p. 566.

[3] *American Geologist*, September, 1902.

[4] *Journal of Geology*, Oct.–Nov., 1902 ; also notes by Calvin and Salisbury in ibid.

[5] *American Anthropologist*, 1902, vol. 4, No. 4, pp. 743–752.

All the parts of the skeleton show a nearly uniform yellowish-white color and all are of similar consistency. Portions of the bones show adhering soil, which now, in its dry state, is uniformly gray. In addition there are spots at which is a closely adhering, hard, brittle, grayish, apparently calcareous concretion.[1]

The bones are quite hard and not very brittle; they are not sufficiently chalky to mark a blackboard. They fully preserve their structure and exhibit no visible traces of fossilization.

The skeletal parts are all entirely normal, that is, free from anomalies or disease, with one exception: a few of the articular surfaces are surrounded by moderate marginal exostoses, such as occur frequently in older individuals, or certain forms of arthritis.

The skeleton is distinctively that of a male of about fifty-five years of age. The man was of medium stature (about 1.65 m.) and of ordinary strength. The bones of the lower extremities indicate better development than those of the upper, showing greater relative use of the former.

Considered anthropologically, all the parts of the skeleton, and the skull in particular, approach closely, in every character of importance, the average skeleton of the present-day Indian of the Central states. Zoölogically, as well as in growth, the Lansing skeleton and the skeleton of the typical present-day Indian of the upper Mississippi region are of the same degree and quality.

There is no resemblance whatever between the Lansing skull and the skulls found in Riverview Cemetery, at Trenton, and in Burlington county, New Jersey.[2]

THE SKULL

The cranial vault is fairly well preserved, but the facial parts and the base are to a large extent destroyed. When recovered by Mr Long the skull was in pieces, but it has been well repaired and is suitable for measurement. The skull shows good development and is in no way artificially deformed. It exhibits slight asymmetry, the left part of the frontal bone protruding somewhat more than the right; such asymmetry is quite common and is not due to any detectable abnormal condition. Viewed from side, top, or base, the skull is ovoid in shape, the smaller end forward; from front and back, particularly the latter, it appears pentagonal, with the summit of the figure upward.

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[1] Some of this concretion covers the edges of breaks, as in the humerus and femur, showing these breaks to be ancient; and more adheres to the occipital and parietals within the cranium.

[2] Hrdlička, "The Crania of Trenton," etc., *Bull. Am. Mus. Nat. Hist.*, N. Y., 1902, vol. XVI, art. III.

The forehead is somewhat low and sloping when compared with that of a well-developed skull of a white man, but it appears ordinary in comparison with the forehead of undeformed skulls of Indians. It is very much superior to that of the Neanderthal cranium.

The temporo-parietal region shows but moderate convexity; the parietal bosses, however, are well defined, though they are not unduly prominent.

The sagittal region is somewhat elevated, forming a moderate sagittal ridge, which extends from about the obelion to bregma; a slight ridge is also seen along the metopic line over the middle third of the frontal bone. These ridges, which, separated or more often joined, are common in Indian skulls, give the cranium, when viewed from before or from the back, the pentagonal appearance.[1] About midway between the bregma and lambda the ridge, which from this point backward rapidly diminishes, forms a quite marked but in no way abnormal summit.

The occiput is quite bulging, as is common in dolichocephaly.

The base is much damaged, but so far as can be determined, it agrees in its general features with that of an average skull of the modern Indian. The lower jaw is also somewhat damaged; it agrees in sexual character with the rest of the skeleton, and may be described as about medium in all its characters and in no way peculiar. The chin shows fair prominence. There are nine teeth remaining in the jaw, all of about average male size and all considerably worn down, which is the rule with older individuals among the Indians.

The thickness of the cranial vault and the weight of the skull are in no way extraordinary. (The thickness of left parietal below temporal ridge is 4 to 5 mm.)

The supra-orbital ridges are quite pronounced, but not abnormal for a male; they are restricted, as is the case in many Indian crania, to the median half of the supra-orbital distance. The glabella is not very prominent.

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[1] See the photographic illustrations of the skull in Professor Holmes' paper, op. cit.

The temporal ridges are moderate; nearest approach to the sagittal suture, 4.5 cm. Occipital ridges, except that at the level of the inion, quite indistinct.

The zygomæ and mastoids are broken; the remnants show nothing unusual.

The nasion depression is good, inter-orbital distance moderate (at level of nasion, 2.6 cm.). Nasal bones show fair breadth (8 mm. beneath nasion; right 7 mm., left 5 mm. broad). The walls of the orbits are rounded, not unduly heavy; orbital depth ordinary.

Parietal foramina absent, mastoidal moderate. The situation and inclination of foramen magnum (so far as it is possible to judge) and the depth of glenoid fossa are as in an ordinary Indian skull.

The sutures show medium complexity and are considerably involved by synostosis (senile). This is most marked in the coronal and the anterior part of the sagittal suture, but extends in lesser degree through the rest of the sagittal and the whole lambdoid. All the sutures about the temporal bone, and the fronto-sphenoidal, fronto-malar, fronto-nasal, and internasal sutures are still free.

Ventrally the skull shows but few brain impressions, except on the temporals, as among modern Indians. The metopic crest is low. The capacity must have exceeded 1500 c.c.

Racially the skull is dolicocephalic (cephalic index, 73.75) and quite high (basion-bregma very near 14.0 cm.). The nasal index cannot be determined; the orbits are probably mesoseme.

Detail Measurements

Diameter antero-posterior (glabella-occipital)	18.9
“ antero-posterior from ophryon	18.8
“ lateral maximum	13.9
“ bregma-basion	near 14.0
“ bregma-opisthion	15.6
“ bregma-biauricular line	12.6
“ frontal minimum	9.4
“ frontal maximum (along coronal suture)	11.3
Nasion-bregma arc	12.8
Bregma-lambda arc	12.1
Lambda-opisthion arc	12.9
Circumference maximum (above supra-orbital ridges)	52.0

Thickness of left parietal, below temporal ridge	4–5 mm.
Thickness of left parietal, above temporal ridge	6–8 mm.
Estimated capacity	1525 to 1550 c.c.

OTHER PARTS OF THE SKELETON

Femora: Maximum length of right, 44.0 cm.; left, broken.

Torsion and inclination of neck moderate. Linea aspera quite pronounced, but not abnormal. The bones are quite strong. The shaft presents a well-marked upper subtrochanteric flattening, as is common in the femora of Indians. There is on each side a rough, long, but low elevation in the location where the so-called third trochanter is sometimes found; this low ridge represents a muscular insertion (gluteus max.) and is a sign of muscular activity.

Tibia: Maximum length of left tibia, minus spine, about 35.7 cm. Right tibia, broken. The bones are of medium masculine strength, and neither in form nor in the inclination of the head show anything abnormal.

Fibulæ in fragments, nothing unusual.

Humeri: Length (maximum) of right, near 32.0 cm.; left, defective (part lost). No unusual torsion. There was apparently a bilateral moderate perforation of the fossa.

Radii: Length (maximum) of left, 25.4 cm.; right, broken. The relative length of the radius with the humerus is somewhat greater than in whites, but is not rare in Indians.

Ulna in fragments, nothing special.

All the bones of the upper extremity are somewhat slender.

Pelvis much damaged, but enough remains to indicate that it was rather small and masculine. The superior semicircular lines are represented by a marked elevation.

Small bones and fragments of the skeleton show nothing remarkable.

Measurements

	R.	L.
Femora: diam. antero-posterior maximum at middle	2.75	2.8
“ lateral maximum at middle	2.75	2.6
“ antero-posterior at upper flattening	2.45	2.3
“ lateral maximum at upper flattening	3.25	3.35
Shape of shaft, right, approaching	I[1]	

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[1] See Hrdlička, "Typical Forms of Shaft of Long Bones," *Proc. Assoc. Amer. Anatomists,* Fourteenth Annual Session, 1900, p. 55.

Femora: Shape of shaft, left	4	
Tibia: left, diameter antero-posterior at middle	3.1	
diameter lateral at middle	2.0	
Index	64.5	
Shape of shaft, both, 3 and somewhat 4.		
Humeri: right, diameter antero-posterior at middle	1.55	1.5
diameter lateral maximum at middle	2.2	1.85

As these measurements show, the shaft is somewhat flattened.

The height of the individual, judging from the long-bones by Manouvrier's tables,[1] was about 1.65 m.

CONCLUSION

The inevitable conclusion from the above examination, which was conducted absolutely without prejudice or preformed opinion (unless it was with the hope that the specimen might prove beyond doubt an ancient one, since such a discovery would be of the greatest importance to American and even to general anthropology), is, as expressed before, that the Lansing skeleton is practically

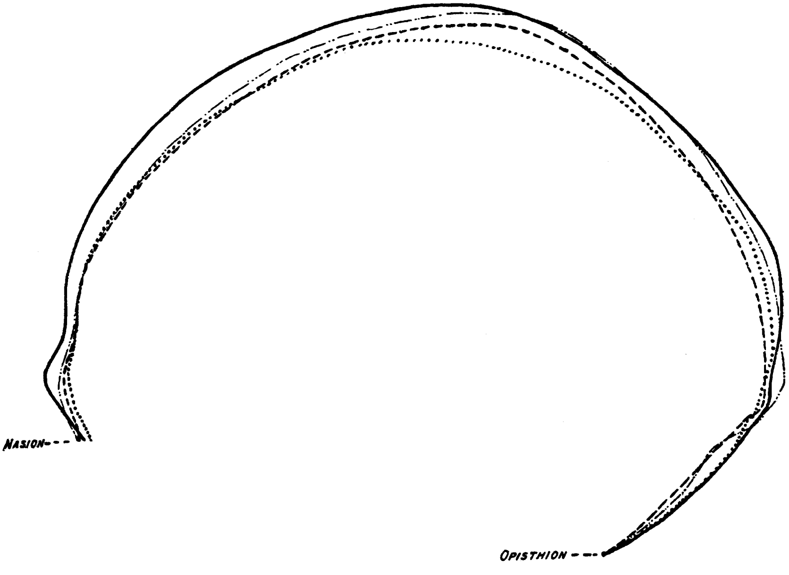

FIG. 8. ——— Lansing skull; - - - - - Kaw skull (152, N. M.); .... Pawnee skull (550 N. M.); –·–·–·–·– Ponca skull (796 N. M.).

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[1] *Mém. de la Soc. d'Anthropologie de Paris,* II sér., IV, 1892. See also *Revue Mens. de l'Ecole d'Anthropologie de Paris,* II, p. 227.

identical with the typical male skeleton of a large majority of the present Indians of the Middle and Eastern states. Any assumption that it is thousands of years old would carry with it not only the comparatively easily acceptable assumption of so early an existence of man on this continent, but also the very far-reaching and far more difficult conclusion that this man was physically identical with the Indian of the present time, and that his physical characteristics during all the thousands of years assumed to have passed have undergone absolutely no important modification.

Comparative Measurements of the Lansing Skull and the Skulls of Other Plains Indians

	Lansing Skull.	Ponka Skull. 796 N. M.	Kaw Skull. 152 N. M.	Pawnee Skull. 550 N. M.	Pawnee Skull. 531 N. M.
Diameter antero-posterior maximum (glabella-occipital).	18.9	18.85	18.4	18.9	18.7
Diameter lateral maximum.	13.9	14.2	13.6	14.05	13.9
Basion-bregma height.	near 14.0	14.0	13.75	13.4	13.7
Cephalic index.	73.5	75.3	73.9	74.3	74.3
Diameter frontal minimum.	9.4	9.0	9.2	9.0	8.9
Diameter frontal maximum (along coronal suture).	11.3	11.5	11.6	11.7	11.1
Nasion-opisthion arc.	37.8	37.7	36.6	38.1	35.2
Circumference maximum (above the ridges).	52.0	52.0	51.2	52.3	51.8
Thickness of left parietal below temporal ridge.	0.4–0.5	0.4–0.6	0.4–0.5	0.4–0.45	0.35–0.45
Cranial capacity.	between 1525 and 1550 c.c. calculated.	1530 c.c.	1445 c.c.	1530 c.c.	1480 c.c.

In order to present further evidence in support of these conclusions, I have taken from the collection in the National Museum several modern male adult crania of individuals belonging to tribes that occupy or occupied sections not far distant from that in which the Lansing skeleton was found. I append the measurements of these skulls contrasted with those of the Lansing cranium and accompany them with an illustration (figure 8). The similarities are all very apparent. If the Lansing skull differs in any way from the others, it is in its somewhat better development, particularly over the frontal region. But the type of the skulls is the same. It would have been well to include some Potawatomi and Kickapoo crania, but these tribes are poorly represented in our cranial collections.

Near the Lansing skeleton was found a portion of the upper jaw of a child six or seven years of age. The bone shows nothing extraordinary. Three of the teeth (first dentition premolars and a permanent first molar) are still preserved; their size is ordinary; the enamel is white and without any cracks. The first permanent molar shows three roots and four cusps.